



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 5 — CHART INFORMATION

SECTOR 5

THE LACCADIVE ISLANDS AND THE MALDIVE ISLANDS

Plan.—This sector describes the islands, atolls, and reefs which make up the Laccadive Islands and the Maldive Islands. The arrangement of the sector is from N to S.

The Laccadive Islands

5.1 The Laccadive Islands (10°00'N., 72°30'E.), meaning the hundred thousand islands, consist of a group of coral atolls lying between 115 and 215 miles off the SW coast of India; several detached shoals and banks lie off the islands.

The islands are divided into two groups, N and S, separated approximately by the parallel of 11°N. The N group, known as the Amindivi Islands, consists of Chetlat, Bitra, Kiltan, Cardamum, and Amini. The S group, known as the Cannanore Islands, consists of Agatti, Androth, Pitti Islet, Kavaratti, Suheli Par, and Kalpeni, on the N side of Nine Degree Channel, and **Minicoy** (8°18'N., 73°02'E.), on the S side of Nine Degree Channel. Minicoy lies about 110 miles S of other islands of the S group and is of special importance due to its location in the principal navigational route of the Indian Ocean.

Each of these islands lies on extensive coral shoals and no parts of these formations are more than about 4m high. The outer edges, which generally enclose a regularly formed lagoon, are higher than the body of these shoals; the lagoons remain calm in the worst weather. The receding tide leaves the outer edges of the reef nearly dry and the tide runs out of the lagoon through breaks in the edges, which are large enough to admit light craft into the natural harbor.

Due to the great depths in the vicinity of the islands soundings give no warning of their proximity, and great caution should be taken in thick weather.

As these islets and islands are low, with coconut trees only 18 to 24m high and not discernible for any great distance, they should be avoided. There are, however, some wide and deep channels between them.

The Laccadive Islands—North Group

5.2 Cherbaniani Reef (12°20'N., 71°55'E.) is the northernmost dangerous reef of the Laccadive Islands. A sand cay, with an islet and some sandbanks on its N and E sides, lies at the S end of the reef, but the greater part of the reef is only visible towards LW. Some boat passages apparently lead into the lagoon.

The NW, N, and E sides NE of Cherbaniani Reef are steep-to, but a bank extends about 1 mile offshore from its W and S sides.

Anchorage may be obtained, in 16.5 to 18.3m, on this bank during the Northeast Monsoon.

Byramgore Reef (11°55'N., 71°45'E.) is separated from Cherbaniani Reef to NNE by a channel about 17 miles wide, very deep, and free from dangers.

Byramgore Reef is below-water, except for its SE point, which dries. Shoal depths lie all around this reef, but the shoal area on the N side, with depths of 7.3 to 14.6m, is about 2 miles wide and is indicated by overfalls. This N shoal area should be avoided as it may be shallower and is encumbered with coral reefs which can be plainly seen by a vessel passing over them. The coral rocks forming the reef are discernible at LW.

Bitra Par, about 24 miles SE of Byramgore Reef, is an atoll which encloses a lagoon. The barrier reef, which dries from 0.3 to 0.9m, is narrow on its W and N sides, but it increases in width on its E and S sides. A light is shown from a white framework tower on Bitra Islet.

5.3 Tree Islet (11°36'N., 72°11'E.), at the N end of the atoll, is about 0.5 mile long in a NW-SE direction and about 183m wide.

An opening in the reef, close S of Tree Islet, has a depth of 2.7m; boats can enter the lagoon through this opening.

Depths within the lagoon are from 5.5 to 7.3m, but it is encumbered with coral reefs, drying and awash, especially toward the S end.

Anchorage can be taken, in 19.2m, abreast the opening S of Tree Islet, with the NE extremity of the islet bearing 335°, distant about 0.6 mile. A vessel reported this anchorage was unsafe for a vessel 91.5m in length, and that there was no safe anchorage off Bitra.

Tidal currents at springs set strongly in and out of the lagoon; care is necessary when making the anchorage.

Chetlat Island (11°41'N., 72°42'E.), about 31 miles ENE of Bitra, is wooded and inhabited. There is a jetty on the NW side of the island. A coral reef stretches around the S and W sides of the island, extending about 0.5 mile from its W side. Shoal water extends about 0.2 mile N and 0.6 mile WNW from the N end of the island, about 0.4 mile W from the coral reef, and about 0.4 mile SSW from the S extremity of the island.

Anchorage can be obtained, in good weather, on the shoal areas extending N from the N end and SSW from the S end of the island.

During the Northeast Monsoon, the best anchorage is in 11 to 18.3m, about 0.4 mile offshore, with the SW end of the barrier reef bearing about 338°, and with the SW and SE points of Chetlat Island bearing 011° and 045°, respectively.

When landing on the island, it is advisable to use a local boat. The best landing place is on the S side of the island, near the SE point, where there is a depth of 2.1m at HW and 1.2m at LW.

Kiltan Island

5.4 Kiltan Island (11°29'N., 73°00'E.), about 20 miles ESE of Chetlat Island, is covered with coconut palms, about 27m high, A reef fringes the W side of the island extending

about 0.4 mile W; shoal water extends about 0.2 mile farther W.

Kiltan Island was reported to be a good radar target at 13 miles.

Rocks and foul ground border the rest of the island, and shoal water extends about 0.3 mile from the N end and about 0.2 mile from the S end of the island. A stranded wreck lies about 0.3 mile NW of the NW end of the island.

Kiltan North Light is shown from a white, round concrete tower at the NW corner of the island. Kiltan South Light is shown from a round stone tower, painted in red and white checkers, situated at the S end of the island.

Anchorage.—Anchorage can be obtained off Kiltan Island in fair weather. The best position is in about 9.1m, with the light structure bearing 129°, distant about 0.6 mile. During S winds, vessels should anchor a little closer inshore.

Anchorage can also be obtained off the S end of the island, in 9.1 to 11m, about 0.4 mile offshore, if the swell is not heavy.

A boat passage leads through the N end of the reef to a shallow lagoon where there is a jetty on the W side of the island; a gap in the reef, about 0.6 mile S, is sometimes smoother. Each gap is marked by buoys.

In calm weather, there is a good landing at the middle of the E side of the island, where a steep-to sandy beach breaks the fringing foul ground.

Caution.—Two patches of discolored water, about 0.5 mile apart and of a light greenish-brown color, were reported (1919) about 45 miles NNE of Kiltan Island.

5.5 Basses de Pedro (13°05'N., 72°25'E.), the S end of which lies about 63 miles NNW of Kiltan Island, has depths of 16.4 to 73m. The bank is large, steep-to, and composed of sand, shells, and decayed coral; the water on the bank is not discolored.

In 1974, the bank was reported to lie from 4 to 5 miles SE of its charted position.

Sesostri Bank (13°08'N., 72°00'E.), about 11 miles W of Basses de Pedro, has depths of 20m to 77m and is steep-to.

Cora Divh, with its SW point about 21 miles NNE of Sesostri Bank, has depths of 27.4 to 55m, sand, decayed coral, and broken shells.

A depth of 24m was reported (1963) to lie about 13 miles ENE of the S end of Cora Divh.

Elicalpeni Bank (11°15'N., 74°03'E.), about 60 miles ESE of Kiltan Island, is about 4 miles in extent, with general depths of 12.8 to 16.5m and a least depth of 10.4m near its SE edge.

Depths from 18.3 to 29m, some unexamined, lie between 16 and 21 miles ENE of Elicalpeni Bank, and a depth of 20.1m, existence doubtful, was reported (1964) to lie 20 miles E of the bank. Depths of 49m (in 1949) and 35m (in 1971) were reported about 5 miles NNW and 47 miles N, respectively, of Elicalpeni Bank. These areas should be avoided, particularly when the Southwest Monsoon is strong enough to raise a considerable sea.

Cardamum Island and Amini Island

5.6 Cardamum Island (Kardamum Island), about 18 miles SW of Kiltan Island, forms the E side of a coral atoll. The ends

of the island are covered with a low growth of scrub. There is a village in the middle of the island.

The drying coral reef, which encloses a shallow lagoon, extends nearly parallel with the island, about 0.8 mile from its W side, and surrounds both the N and S ends of the island. It extends about 0.3 mile N of the N end of the island, and about 0.8 miles S of the S end of the island.

There are two narrow boat passages through the reef, both marked on each side by a stone post; one passage is at the N end of the atoll and the other 3 miles SSW of the N end.

Anchorage in good weather can be obtained off the reef S of Kadmat, in depths from 8m to 20m, and from 0.2 to 0.5 mile from the reef.

Small vessels with local knowledge can anchor, in 31m, near the boat passage, and about 0.2 mile from the reef.

5.7 Amini Island (Ameni Island) (11°07'N., 72°44'E.), the most important of the Amindivi Islands, is fringed by a reef from about 0.2 to 0.4 mile wide. The island has a post office and a hospital. The channel between Amini Island and Cardamum Island is safe and deep, but depths of less than 10m project 0.5 mile S from the S tip of the reefs surrounding Cardamum Island.

Amini Island Light is shown on the S point of the island.

The village is in the middle of the W side of the Island. A raised stone platform, with steps leading to the beach, is in front of the village. A stone pillar lies behind the platform. Fronting the platform is a narrow passage across the reef which should be navigated with caution; boats approach the steps through a channel marked by pillars.

Anchorage can be obtained off the W side of Amini, in depths from 7 to 15m; outside the 20m depth contour, depths increase rapidly. The recommended anchorage is with the S point of the island bearing 137°, distant 1.1 miles, in a depth of about 15m. In 1948, a vessel approached its anchorage, with the steps in front of the village bearing 107°, and anchored on that bearing, in a depth of 9.1m, about 0.5 mile from the beach.

Peremul Par, about 37 miles W of Amini Island, is a narrow drying reef enclosing a lagoon; at HW, with a smooth sea, much of the reef does not break, making the edge of the reef difficult to distinguish.

Inside the reef, a shoal, with depths of less than 1.8m, extends about 0.8 mile from its SW and N sides towards the middle of the island. The remainder of the lagoon is encumbered with drying coral reefs, with depths of 1.8 to 11m between them.

Several good boat entrances are on the E side of the island; two boat entrances are on the W side of the island.

Anchorage can be obtained, in 18.3m, about 0.3 mile offshore, abreast the boat entrances on the SW side of Peremul Par; local knowledge is necessary. Anchorage can also be obtained, in 18.3 to 22m, off the NE side of the reef, with the sand cay bearing 213°, distant about 0.5 mile.

The Laccadive Islands—South Group

5.8 Androth Island (10°49'N., 73°41'E.), the most fertile of the Laccadive Islands, is densely planted with coconut palms. It is the residence of the Tehsilder, who administers the Laccadive Islands. The village lies about 1 mile from the W

end of the island. There is a small hospital and a leper colony on the island.

A light, with a racon, is shown from a white, square masonry structure, 33m high with black bands, on the E point of the island, and a light is shown from a white concrete tower, 10m high, on the NW corner of the island. A depth of 12.5m is located about 6 miles ENE of Androth.

The island is surrounded by a coral reef, through which there is a small channel for boats on the N side. The S side of this reef is steep-to, but from the N side a coral bank projects about 6 miles N, and has a greatest width of about 10 miles, with depths from 10.4 to 31m. Shoals, with depths of 5m and 5.9m, lie about 0.6 mile SSW and 0.4 mile W, respectively, of the NW end of the island. Several isolated shoals, with depths of 10.5 and 11m, lie up to 1.1 miles N of the N coast of the island.

Anchorage.—Anchorage may be obtained, in a depth of about 10m, sand and coral, anywhere off the N side of the island, about 0.5 mile offshore; local knowledge is necessary.

Good anchorage can be obtained, in 9.1m, coarse sand and broken shells, about 0.7 mile N of a flagstaff on the shore close N of a red-roofed mosque at the W end of the village.

Anchorage can also be obtained, in 16.5 to 18.3m, off the E end of the island where the bottom appears to be smoother, but local knowledge is necessary.

During the Northeast Monsoon, vessels can anchor in 18.3 to 22m, about 0.5 mile offshore on the SW coast of the island, but there is little shelter.

Caution.—Elikalpeni Bank, with a least depth of 10.4m, lies about 33 miles NE of Androth Island. Other unexamined depths of as little as 18.3m lie about 20 miles ENE of Elikalpeni Bank.

5.9 Pitti Islet (Piti Sand Bank) (10°46'N., 72°33'E.), about 66 miles W of Androth Island, is a low islet. The N and NE sides are sandy. A black rock is on the E side and there were several stone cairns, about 6.1m high, on the islet.

A bank of sand, with charted depths of 11 to 37m, extends about 3 miles S and 24 miles NNE from the islet. The bank has not been fully examined and depths may be less than charted.

Agatti Island (10°51'N., 72°12'E.), about 21 miles W of Pitti Islet, lies towards the S end of an unnamed atoll, with Kalputhi Islet (Kalputi Islet) close SSW. A clump of palm lies about 1 mile from the S end of Agatti Island. A light is occasionally shown from the N end of Agatti Island.

The coral reef surrounding Agatti Island and Kalputhi Islet extends about 2 miles offshore on the W side and encloses a shallow lagoon; boats may enter the lagoon through a passage with the clump of palms on Agatti Island bearing 142°. Landing is on the NW side of Agatti Island on a steep-to beach.

Depths of less than 10m extend 0.5 mile S of Kalputhi Islet and the same distance N of the N end of Agatti Island.

Bingaram, an islet in the N part of the atoll, lies 6 miles NE of the N point of Agatti Island; it is 0.7 mile long in a N-S direction and 0.5 mile wide at its widest part.

Tinnakara, another islet 1 mile long, lies 1.5 miles ENE of Bingaram. These two islets are nearly encircled by a steep-to reef which, from a position 2.5 miles NW of Bingaram, trends ESE for 4.5 miles, then SW for 3 miles, and then W for 3.5 miles, lying about 1 mile N and S of Bingaram. The Parali Islets, three small sand cays, lie on the NE corner of the reef and

are almost connected to the E end of Tinnakara, which lies about 0.3 mile within the E side of the reef.

Landing can be effected on Bingaram and Tinnakara, but both are uninhabited and have no good water. The area between the W extremities of the encircling reef is shallow, with numerous coral heads with depths of less than 1m; much of the lagoon within the reef dries.

Anchorage can be taken, in 18.3 to 22m, coral, off the entrance to the reef surrounding Agatti Island, but it is not recommended.

Good anchorage can be taken in depths, of 10m to 15m, in an area 2 miles wide between the N end of Agatti Island and the reef encircling Bingaram; this area is apparently free from dangers, but ships should proceed with caution. The recommended anchorage is with the NE extremity of Agatti Island bearing 215°, distant 1.5 miles, in a depth of 13.7m, coral.

On the W side of the atoll, near its N end, there is an entrance to the lagoon about 0.8 mile wide. Good anchorage can be obtained W of this entrance, in 10m, coral, with the N point of Bingaram Islet bearing 078°, distant 3.5 miles.

5.10 Kavaratti Island (10°34'N., 72°39'E.), about 61 miles WSW of Androth Island, is low, and was densely covered with palms, about 28m high, in 1964. The N part of the island is more heavily populated; the Administrator for the Laccadive Islands resides on the island. Kavaratti Island Light is situated on the SE point of the island.

On the NW side of the island, a reef lies about 0.6 mile offshore, nearly parallel to the beach, and encloses a shallow lagoon. The reef, steep-to except at its S end, has depths of 183m within 0.2 mile of its edge. There is a boat entrance at the N end of the lagoon, with a least depth of 0.9m. A lighted beacon marks the W side of the entrance; within the entrance, lighted buoys mark the channel between the reef and shoal water fringing the island.

Tides—Currents.—Tidal currents near Kavaratti Island were observed, in October, to set SE with the flood and NW with the ebb, at a velocity of 0.5 to 1 knot.

Anchorage.—Anchorage, during the Northeast Monsoon and in fair weather, can be obtained, in 7.3 to 12.8m, sand and coral, on a shoal about 0.7 mile wide, which extends about 0.7 mile S from the island.

5.11 Suheli Par (10°05'N., 72°16'E.), the SW atoll of the Laccadive Islands, consists of a drying barrier reef enclosing a lagoon. North Islet (Valiyakara Islet) and South Islet (Cheriyakara Islet), both uninhabited, lie in the lagoon. The reef was reported to extend 2 miles SW in 1980.

Suheli Par Light is shown from a white metal column, with red bands, on the SE end of South Islet. A light is shown from a white, wooden framework tower on North Islet.

It was reported in 1980 and in 1982, that the reef extended 3 to 3.5 miles SW from the light.

Good radar returns have been reported from Suheli Par at 16 miles.

Two openings are on the NW side of the barrier reef, which are navigable by small vessels with a draft not exceeding 1.8m, but local knowledge is necessary.

Good anchorage was found (1948) in 12m, sand, with the N end of North Islet bearing 163° and the S end of South Islet

bearing 201°. In 1979, it was reported that the reef projected 4 miles WSW from the light.

5.12 Kalpeni (10°06'N., 73°39'E.), the SE atoll of the Laccadive Islands, lies about 39 miles S of Androth Island. It consists of two narrow, low islands lying on the E side of a reef which encloses a lagoon.

Kalpeni Island, the S and larger island, was densely planted with coconut palms, about 30m, high in 1967. A steep-to bank, with depths between 10 and 20m, extends about 0.4 mile S from the S end of the island. Kalpeni Light is shown from a round stone tower, 40m high, lying 1.8 miles N of the S extremity of Kalpeni Island.

Cheriyam Island (Cheria Island), the N island, is also covered in palm trees.

The barrier reef is steep-to and the sea breaks heavily on it. A narrow boat channel leads through the reef into the lagoon. Landing can sometimes be made on the E side of Kalpeni Island.

Good radar returns have been reported from Kalpeni Island at 20 miles.

Anchorage.—A vessel anchored (1950) in 12.8m, coral, sand, and rock, about 0.4 mile offshore, off the S side of Kalpeni Island.

Minicoy Island

5.13 Minicoy Island (8°17'N., 73°03'E.), forming the SE side of an atoll, is included with the Laccadive Islands for administration, although it lies about 110 miles SSW from the nearest of these. The island lies about 70 miles N of Ihavandiffulu Atoll, the N atoll of the Maldive Islands.

Kodi Point, at the NE extremity of the island, may be identified by a single conspicuous palm; a rock, 0.6m high, lies about 183m NE of the point, and the barrier reef extends about 183m farther NE. A shoal, with a depth of 6.1m, lies nearly 0.5 mile NE of Kodi Point.

The town of Minicoy lies near the center of the island, about 2.5 miles SSW of Kodi Point. There is a dense cover of coconut palms, about 18.9m high, on the E side of Minicoy Island.

Roebera Point forms the SW extremity of Minicoy Island; Wiringili Islet (Small Pox Islet) lies on the barrier reef about 0.5 mile NW of the point.

The W side of the barrier reef dries in places; it dries 0.6m about 1.3 miles N of Wiringili.

The lagoon is encumbered with numerous shoals and dangers, and the SW part dries. Saleh Magu Channel, at the NE end of the atoll, is the principal opening into the lagoon, with depths of 1.8 to 3.7m, but can only be used by small vessels with local knowledge.

Minicoy Island Light is shown from a white tower on the SW end of the island, about 0.4 mile ESE of Roebera Point. The top of the light structure is obscured by trees on certain bearings and within distances of less than 6 miles.

Good radar returns have been reported from Minicoy Island at 18 miles. It was also reported that the shape of the island becomes identifiable on radar at 15 miles.

In 1982, it was reported that a radiobeacon was established on the light and a conspicuous red and white pylon stood close S of it.

Local boats meet ships and may be summoned through the lighthouse keeper who can communicate with vessels using the International Code of Signals.

Anchorage.—The island offers no suitable anchorage, as the bottom rises steeply toward the reef. Ships may drift safely under power in fairly calm water close offshore E of the island during the Southwest Monsoon.

Caution.—Minicoy Island should be approached from the S, passing about 4 miles S of the light structure. In bad weather, landfall in morning twilight is considered safe.

Vessels have been wrecked on Minicoy Island due apparently to shaping a course to pass a few miles N of Minicoy Island Light (in some cases after sighting the light from E), instead of passing S of it where the light is a useful guide.

The practice of passing a few miles N of the island, especially at night, is a dangerous one as the island is over 4 miles long in N-S direction, and unpredictable strong S sets are encountered at times.

Nine Degree Channel

5.14 Nine Degree Channel (9°00'N., 73°00'E.) lies between Minicoy Island to the S and Suheli Par about 113 miles NNW, and Kalpeni Island to the N. It is very deep and free from dangers.

Investigator Bank (8°32'N., 73°17'E.), NE of Minicoy Island, has a least depth of 217m, with depths over 914m in the vicinity.

Eight Degree Channel

5.15 Eight Degree Channel (7°40'N., 73°00'E.), between Minicoy Island and Ihavandiffulu Atoll, about 70 miles S, is free from known dangers. It is recommended to keep nearer to Minicoy Island than to the Maldive Islands, as the current sets S from the end of September to the end of the year, and there is the added advantage of sighting Minicoy Island Light.

The currents in this channel are much the same as those in the N end of the Maldive Islands, but in the Northeast Monsoon they at times set NW; occasionally they set N with S winds.

The Maldive Islands

5.16 The Maldive Islands (3°30'N., 73°00'E.), a chain of atolls, extend from **Turakuna** (7°06'N., 72°54'E.), the N island of the Ihavandiffulu Atoll to about 40 miles S of the Equator, along the meridian of 73°E.

Much of the detailed information in this sector is very old, as little recent information can be obtained from places so seldom visited. Dates of recent definite information have been included in the text.

Between the different atolls of the Maldive Islands there are several good deep channels. Some of these are intricate and demand local knowledge; such channels should be avoided by low-powered vessels as currents set strongly through them, setting E or W according to the season; marked variations in direction have been reported.

The coral islands on the atolls, although very low, may be detected by radar at ranges over 20 miles, while the arrange-

ment of individual islands may be obtained at about 15 miles, and the breakers at the edges of reefs detected at about 2 miles.

There are numerous deep openings through the barrier reefs, which are difficult to identify beyond a distance of 3 or 4 miles, when the reefs appear as one continuous line. Within 1 or 2 miles, the openings will be distinctly seen when the sun is high and behind the observer.

Extra care should be taken at periods of spring tides when strong rips and eddies in the reef entrances make for difficulty in seeing submerged hazards.

By day and with the sun in a favorable position, even the less readily navigable channels can be negotiated without undue difficulty, as all the underwater dangers are generally visible for some distance from the masthead.

By night, a vessel should pass through only the four larger channels between the atolls, and even these should be avoided unless the vessel has an accurate fix before entering.

Within the atolls good anchorage can be obtained in very smooth water of moderate depth, with a coral and sand bottom.

On the inhabited islands, boat channels leading over the reefs to the villages are marked by distinctive stakes.

Ihavandiffulu Atoll

5.17 Ihavandiffulu Atoll (7°02'N., 72°54'E.), the N atoll of the Maldive Islands, is administered with Tiladummati Atoll, and consists of about 24 islands, most of which lie on the circumference of the barrier reef. Seven of the islands were inhabited in 1970.

General depths of 37 to 55m are in the E half and 18.3 to 37m in the W half of the lagoon. Numerous shoals are in the lagoon, particularly in the W half. These shoals, with the sun well up, can easily be seen as pale green against the dark deeper water; they are not readily seen if the sky is overcast.

The main occupations are fishing and the cultivation of coconuts, most of the islands being heavily wooded with palms.

Tides—Currents.—Currents at Ihavandiffulu Atoll are only experienced occasionally and are probably influenced entirely by local weather conditions. There appears to be no regular tidal currents.

A current of 2 knots setting N was experienced (December, 1933) about 50 miles E of the atoll, but practically no current in this position was experienced about a month later.

During December and January in the offing, the current generally sets N or W, but it is irregular.

A set to NW between Uleguma and Wagaru, and to W between Uleguma and Murdu, was sometimes observed (December, 1933 and January, 1934). The maximum velocity was about 1 knot. In the middle of the lagoon there was an occasional set to NW.

5.18 Turakuna (7°07'N., 72°54'E.), the N island of Ihavandiffulu Atoll, was inhabited in 1970 with a small village on its N side. On its S side, landing can be effected through a gap in the encircling reef.

Good radar returns have been reported from Turakuna at 15 miles.

Ulegama, about 1.3 miles SE of Turakuna, is low, level, and thickly wooded. The village lies near the center of the island, surrounded by coconut palms and breadfruit trees. A narrow

reef fringes the seaward side of the island; a beacon lies on this reef nearly 1 mile SE of the N end of the island. The reef on the inner side of the island is separated from the shore, forming a lagoon; there are two openings for fishing boats.

Good radar returns have been reported from Ulegama at 15 miles.

Muladu, about 5 miles SE of Ulegama, has a small village on its W side. There is a boat passage, abreast the village, through the otherwise unbroken reef surrounding the island.

Between Muladu and Ulegama lie three, small, thickly-wooded, uninhabited islets known from NW to SE, respectively, as Murdu, Beramundu, and Gumati.

The islet of Gallandu lies about 3.5 miles SSW of Muladu. Sunken reefs lie about 1 and 2 miles, respectively, N of Gallandu.

Digufuri Reef (Digfurhi Reef) (6°56'N., 72°57'E.), at the S end of Ihavandiffulu Atoll, has an islet at its E end; a small sandbank, with palms on it, lies about 0.8 mile ENE of the islet.

Ihavandu, one of the few islands within the lagoon, lies close N of Digufuri Reef and about 3 miles W of Gallandu. The island is densely populated, and there is a landing on the S side.

Hauwandu, about 0.8 mile W of Ihavandu, lies at the SE end of a section of the barrier reef which extends about 9 miles NW, then 3 miles NE; of the eight islands and islets on this stretch of reef, Umbala and Hatefuri were inhabited in 1970. Umbala, with a large village, lies about 0.5 mile NNW of Hauwandu, and is the principal island of the atoll; its natural harbor, formed between the island and the seaward side of the reef, provides good anchorage for numerous fishing craft. Hatefuri, about 4 miles farther NW, has a fishing village on its NE side.

Matari, about 0.8 mile NW of Hatefuri, was used as a cemetery and had a flagstaff and small temple on it; elsewhere it was well-wooded.

The islet of Kandufuri (Kankolufuri) lies on the above stretch of reef, near the NW point of Ihavandiffulu Atoll. Good radar returns have been reported from the islet at 15 miles.

5.19 Wagaru (7°06'N., 72°52'E.), near the N end of the atoll, about 4 miles ENE of Kandufuri, is low and well-wooded; it is surrounded by a reef except on its SE side. North Rock, with a least depth of 5.2m, lies about 1 mile W of Wagaru.

Anchorage.—The best anchorage is in 28 to 37m, sand and coral, W of Ulegama.

There is a good anchorage E of the reef between Hauwandu and Umbala, in the SW part of the lagoon, in 33 to 37m. This is probably the best anchorage during the Southwest Monsoon, but a heavy swell might reach it through Southwestern Entrance.

Good anchorage during the Northeast Monsoon may be obtained, in 46 to 55m, W of Muladu and Gumati in the E part of the lagoon.

Anchorage are also available S of Turakuma and Wagaru.

Directions.—Vessels approaching from N enter through North Rock Passage, between Wagaru and North Rock, 1 mile W; through North Western Entrance, between Wagaru and Turakana; or through Northern Entrance, between Turakana and Ulegama.

North Rock Passage may be entered in depths of not less than 18.3m by keeping towards Wagaru; the other entrances have depths of not less than 20.1m in the fairway midway between the islands, but there are shallower depths close within the lagoon in the Northern Entrance. The edges of the reefs on each side of the passage can be seen from aloft at a good distance.

Vessels approaching from E use North Eastern Entrance between Ulegama and Murdu, about 1.8 miles SE, or East Entrance between Muladu and Gallandu. North Eastern Entrance has a least depth of 35m midway between the islands.

In East Entrance, there is a shoal patch midway between the flanking islands and a second patch farther SSW. If using this entrance, bring the NE end of Medfuri to bear 287° and enter the lagoon on this heading. When the S end of Muladu bears 070°, steer for the N end of Hauwandu bearing 250°, and then to the anchorage off that island.

Caution.—Collingrufuri, Medufuri, and Manafur, three islands surrounded by rocky heads, foul ground, and shoal water, lie about 3.3 and 3 miles N, and 2.3 miles NNE, respectively, of Ihavandu. Two drying rocks lie on a rocky shoal close N of Medufuri.

Endeavour Shoal, a large coral patch with a least depth of 6.1m, lies about 3.3 miles SSW of Ulegama.

Ormonde Rock, with a least depth of 4.6m, lies about 2 miles SW of Ulegama.

In addition, there are numerous shoals and rocky patches in the lagoon, particularly toward the NW and SW sides; under suitable conditions all can be easily seen from aloft.

Gallandu Channel

5.20 Gallandu Channel (6°54'N., 72°57'E.), between the S end of Ihavandiffulu Atoll and the NW end of Tiladummati Atoll, about 2.8 miles S, is very deep and free from dangers in the fairway. Passages on each side of the channel lead into the lagoons, where anchorage may be obtained.

Tides—Currents.—Tidal currents set ENE through the channel with the flood tide and WSW with the ebb.

Tiladummati Atoll

5.21 Tiladummati Atoll (6°45'N., 73°00'E.) consists of about 40 islands and islets; most lie farther apart and are larger than those in the Maldives farther S. The islands in the NE part of the atoll are the largest.

There are fewer islets but more reefs on the W side of the atoll than on the E side. The passages through the barrier reef on the W side are navigable but should be avoided. Safe passages leading into the lagoon are on the E side of the atoll, but the vessel must be conned from aloft.

Caution.—Aerial photographs show the shapes and size of islands to differ substantially from surveys originally dated from 1940. In addition, some features charted as reefs are, in some cases, dry at HW and wooded.

Maduni Faro (6°51'N., 72°57'E.), a lagoon reef, forms the NW extremity of the atoll. The islets of Marandu, Tukandu, and Miledu, the first two inhabited in 1970, lie, respectively, on the barrier reef between the N end of Maduni Faro and the islet

of Gafuri, about 5 miles ESE. Gafuri lies on the W side of a detached reef with an unnamed lagoon reef close W.

An unnamed lagoon reef, the islet of Dedu, and Warifuri Faro lie about 2.5, 4, and 6 miles, respectively, NE of Gafuri. Warifuri Faro is a large lagoon with the islet of Warifuri at its S end. A lighted beacon lies on the N side of Warifuri Faro. The islets of Dedu and Warifuri are inhabited; the islet of Noradu lies between the latter two islets.

5.22 Kelai (6°58'N., 73°13'E.), at the NE extremity of the atoll, was inhabited in 1970. Good radar returns have been reported from Kelai at 14 miles. The islet of Tinadu lies about 3 miles WSW of Kelai.

The island of Filadu has an opening between it and Kelai, 1.5 miles N, and between it and Baura, 3 miles SSW, but the latter is encumbered by several rocky patches in the fairway.

The barrier reef extends from Baura to the island of Mavaidu, about 20 miles SSW. From N to S, the islands of Hanimadu, Noliwang Faro, Nuriwari, Kuludu Faro, and Komangdu form the E side of the atoll, and have wide openings into the atoll on each side of them. All the islands on this side of the atoll were inhabited in 1970, as well as ten others within the lagoon.

Kuludu Faro has a large village fronted by a sandy beach and lagoon, which is enclosed by a coral reef on its W side. The boat channel to the small harbor (1942) was wider and deeper than those usually found in these islands.

Muradu (6°33'N., 72°54'E.) lies on a circular reef near the W edge of the atoll; the latest maps prepared from aerial photography (1968) show that this island has joined the islet charted 0.8 mile W of it. Some rocky patches lie S and SE of Muradu.

Naguri, an island with a circular lagoon reef, lies about 7 miles N of Muradu; two large reefs lie between these islands.

A lighted beacon lies at the NW point of a reef, about 3.3 miles NW of Muradu.

Nawadu, about 5 miles NNE of Naguri, was populated in 1970.

There is an opening into the lagoon, about 4 miles wide, between Rufuri, a small islet, 0.5 mile N of Nawadu, and Maduni Faro, at the NW corner of the atoll.

Miladummadulu Atoll

5.23 Miladummadulu Atoll (6°10'N., 73°08'E.) lies on the same submarine plateau as Tiladummati Atoll and is the continuation S of it. The N boundary of this atoll approximately follows the parallel of 6°29'N.

Miladummadulu Atoll contains about 100 islands and islets lying principally on the E side; over 40 of these were populated in 1970, and almost all are wooded, with palms predominating.

The lagoon can be navigated in daylight with ease as there are few dangers, especially in the N part, but the vessel must be conned from aloft. Depths in the lagoon are moderate; the bottom is sand, with clay in places.

Tides—Currents.—Tidal currents at Miladummadulu Atoll set ENE with the flood and WSW with the ebb, attaining a velocity of 1.5 to 2 knots at springs. The tidal currents are greatly influenced by the prevailing monsoon currents.

The island of **Numara** (6°26'N., 73°03'E.), with the islet of Nu close NNW, lies at the NE corner of Miladummadulu Atoll.

A very wide opening into the lagoon lies between Numara and Fivaku, about 9 miles ESE. Fivaku was inhabited in 1970.

The barrier reef then extends about 13 miles SSE from Fivaku to the S end of a detached reef on which lies the island of Farukolu, with Furnadu on the S part of the reef. The island of Makandudu lies about 2 miles NW of the reef. The latter three islands were inhabited in 1970. The islands of Nalandu and Milandu lie farther N. There are deep wide openings into the lagoon between all these islands and also between Makandudu and Farukolu.

From the S end of Furnadu, the barrier reef extends about 8.5 miles S and 6 miles ESE to Kuludu (Kendikolu), the largest island of the atoll and inhabited in 1970. Many of the islets on this stretch were inhabited in 1970. The passage into the lagoon S of Kuludu is wide and safe.

Ma Faro (Mafarru), a reef, lies about 4.5 miles SE of Kuludu; an island of the same name occupies the S part of this reef on the seaward side.

Edu Faro (Eddufarru), a reef enclosing a lagoon, lies about 5 miles SSW of Ma Faro.

5.24 Manadu (5°47'N., 73°24'E.), close within the lagoon between Ma Faro and Edu Faro, was densely populated in 1970, when the main village was near the middle of the N side of the island. The island is profusely covered in vegetation, including coconut palms, banyan, breadfruit, and almond.

Good anchorage may be obtained on the N or S side of Manadu according to the season.

A boat channel passes through the reef, which extends the whole length of the N side of the island; the passage is narrow, about 1.8m deep, and fringed by large boulders of coral rock. Inside the reef is a deep channel, from 18 to 28m wide, skirting the beach.

Ten other islets within 9 miles of Manadu, and also within the lagoon, were inhabited in 1970.

The islet of Karema lies about 5 miles SW of Edu Faro.

Kandudu (Kharndudu) (5°39'N., 73°16'E.), inhabited in 1970, lies on the barrier reef at the S extremity of Miladummadulu Atoll, about 2 miles W of Karema.

From Kandudu, the barrier reef extends 12 miles NW to Mavila (Malwillarwarru); the latter islet and the islets of Rafuri, Watedu, Didu, and Fadu on this SW face of the atoll were inhabited in 1970.

Between Mavila and Kumandu, about 16 miles NNW, are several lagoon reefs and islets. The island of Kumandu was inhabited in 1970; from about 1 mile SE of the island to about 3 miles farther SE, banks of sand and coral lie along the seaward side of a large lagoon reef. Close N of Kumandu, two small islets lie on the E side of a detached reef; the latest maps show the islets to lie N and S of each other.

The NW part of the barrier reef consists almost entirely of reef, enclosing separate lagoons.

Tree Sand Bank, about 6 miles NNW of Kumandu, extends about 2.5 miles into the lagoon and has an islet near its center; about 1 mile S lies another detached sandbank. A lighted beacon lies on the N side of the reef, 2 miles N of the W extremity of Tree Sand Bank.

Goadu (6°25'N., 72°55'E.) and Kandute, about 1 mile NW, lie within the main lagoon and were inhabited in 1970; the

main village was in the center of each island. It was reported that landing can be made anywhere along the SE side of Kandute, where the fringing reef has depths of 1.2 to 1.8m.

Makunudu Atoll

5.25 Makunudu Atoll (6°20'N., 72°36'E.), once known as Malcom Atoll, is a large reef encircling a deep but reef-encumbered lagoon, and is administered as part of Tiladummati Atoll; it is separated from the NW side of Miladummadulu Atoll by a deep channel, about 9 miles wide. Two openings on the E face of the lagoon can only be used by boats.

Faro Doru (Defarudorhi), an islet on the E side of the atoll, about 6 miles SSW of Makundu, was wooded in 1970. The S and W sides of the atoll have only the surf and an islet at its NW extremity to indicate their outline.

Fadiffolu Atoll

5.26 Fadiffolu Atoll (5°25'N., 73°30'E.) consists of about 30 islets, only four of which were inhabited in 1970. The principal occupations are sail weaving and coir making. The depths in the lagoon are moderate and the bottom is sandy; there are many drying and submerged coral heads with depths of 1.8 to 3.7m.

Tides—Currents.—Tidal currents set strongly through the openings into the lagoon.

Fehingili (5°33'N., 73°29'E.) is the N islet of the atoll. There is an opening into the lagoon between Fehingili and Kuredu, about 0.8 mile W; there are moderate depths in the entrance, but about 0.8 mile within the opening, some reefs lie in the fairway. Furifaro, about 4 miles SSE of Fehingili, lies in the center of an opening into the lagoon. The islet, with a rocky shoal close NW, lies on a reef.

The barrier reef, with several islets on it, extends about 7 miles ESE to Difuri (Divepure), at the NE end of the atoll. The latter islet and Faidu, about 1 mile NW, were inhabited in 1970.

From Difuri, an unbroken line of barrier reef curves SW to Aligau, at the S extremity of the atoll; several islets are on this section of reef.

During the Northeast Monsoon, the sea breaks with violence upon this unbroken stretch of barrier reef; coral rock and sand banks appear at low water along this stretch.

There is a wide opening into the atoll between Aligau and Lowalfuri, about 3.5 miles NNW; the islet of Madewaru lies near the middle of the opening.

From Lowalfuri, the barrier reef, enclosing several islets, extends about 7 miles NW to Dehu, a group of islets. Several good channels lead into the lagoon between the islets on the barrier reef. Kanifuri (Kanifurhi), about 2 miles W of Dehu, forms the W extremity of the atoll.

From Kanifuri, the barrier reef extends about 7 miles NNE to Fallwaru (Faileweru). The islet of Naifaro, the most densely populated of the atoll in 1970, lies on the reef about 2 miles SSW of Fallwaru.

Between Fallwaru and Hurawali, about 4.5 miles NE, several islets and detached reefs lie some distance SE of the enclosing reef. There are several channels into the lagoon between islets in this section of the atoll.

Malosmadulu Atoll

5.27 Malosmadulu Atoll (5°30'N., 72°55'E.) consists of North Malosmadulu Atoll and South Malosmadulu Atoll, which are separated by Moresby Channel, about 1.8 miles wide. These two atolls are similar in character, their W sides being composed of a series of lagoon reefs, some prominent and others in the background. This is a feature common to the N atolls of the Maldive Islands.

5.28 North Malosmadulu Atoll.—Maduni Faro (5°53'N., 72°54'E.), a lagoon reef, lies at the N of the atoll. Wadu, inhabited in 1970, lies about 3 miles ESE of Maduni Faro, at the S end of a large lagoon reef.

A wide opening into the lagoon lies between Maduni Faro and Wadu; it is free of known dangers in the middle of the fairway, with depths of 37 to 44m, sand. Some rocks lie about 3 miles NNW of Wadu.

Anchorage.—There is good anchorage in the channel between Wadu and Maduni Faro or farther S in the lagoon.

The **Powell Islands** (5°58'N., 72°55'E.) consists of two islands on a detached reef. Etingili is the NW island and Alifuri is the SE island; the latter island was inhabited in 1970.

The channel between the Powell Islands and Maduni Faro, about 3 miles S, is deep and free from known dangers.

The E side of North Malosmadulu Atoll consists of about 20 islands and islets separated by good passages leading into the lagoon. About 5 per cent of the above islands and islets were inhabited in 1970.

Navigation in the central part of the atoll is impracticable due to the numerous coral heads.

The S side of the atoll is formed by reefs lying between **Berriam Faro** (5°26'N., 73°00'E.) and Mamanago Faro, about 7 miles SW; three islets lie on this section of the barrier reef.

The SW face of the atoll is formed by Mamanago Faro, at its SW extremity, and three similar lagoon reefs farther N.

Maregiri (5°31'N., 72°49'E.) lies at the S end of the NW side of the atoll. From this islet the barrier reef, consisting of a series of lagoon reefs, some with small unnamed islets, extends about 25 miles NNE. These reefs lack above-water features and are therefore difficult to identify; the channels between them are therefore better avoided, especially since the central part of the lagoon is unsafe for navigation.

Moresby Channel, separating North Malosmadulu Atoll and South Malosmadulu Atoll, has depths over 183m and is free from known dangers. The W entrance to this channel has no wooded islet near it and is difficult to identify.

5.29 South Malosmadulu Atoll.—Hanikandu Faro (5°17'N., 72°51'E.), at the NW extremity of the atoll, is separated from Kari Faro, about 0.8 mile S, by an opening into the lagoon. Dukandu, an island, lies in the middle of the inner end of the opening. Kari Faro is a reef enclosing a lagoon, with the islets of Iwafuri and Fähris on its S side.

From the opening between Hanikandu Faro and Medu Faro, about 1.3 miles NE, a deep channel leads E to the NE side of the atoll.

Islets and reefs on the S side of the channel extend E from Hanikandu Faro. Fendu was reported inhabited in 1970. Suda-

roa, about 6 miles farther E, lies at the E entrance of the channel. Kumadu lies 1 mile E of Sudaroa.

The N part of South Malosmadulu Atoll is triangular in shape. There are numerous openings into the main lagoon on the N and E sides of the atoll.

Anchorage.—Anchorage can be obtained off the N side of Hitadu.

There is a wide opening into the lagoon between Olugeri, close W of Hitadu, and Boduffnur, about 2.8 miles farther W. A rock shoal, with a depth of 12.8m, lies in the opening.

Horsburgh Atoll

5.30 Horsburgh Atoll (Goidu Atoll) (4°52'N., 72°55'E.), about 6 miles S of South Malosmadulu Atoll, is considered as part of the latter atoll for administrative purposes. Horsburgh Atoll was reported (1987) to lie approximately 2 miles SE of its charted position.

Goidu, at the NE end of the atoll, is the largest islet, and was inhabited in 1970. It has been reported (1994) that the shape of the island changes over time.

Fehendu and Furudu, about 1 mile and 3 miles, respectively, W of Goidu, were inhabited in 1970, when both were wooded, with palm trees predominant. The villages on the N sides of these islands are visible from seaward.

Inafuri (Furhi), an islet, 15m high and bushy, lies on the reef about 3 miles W of Furudu.

The islet of Fehenfuri, reported (1994) difficult to identify, lies on the S side of the barrier reef, about 4 miles SSE of Inafuri. The islet of Mafuri lies about 1.3 miles W of Fehenfuri.

The lagoon is fringed with dangers, but the center of the lagoon is clear.

Anchorage.—Anchorage, in 27 to 42m, good holding ground of sand, mud, and clay, can be obtained in the lagoon.

The only opening into the lagoon lies between Mafuri and Fehenfuri. The Dorukandu, as the channel through this opening is known, lies on the W side between the barrier reef and the shoal water extending nearly 0.8 mile W from the reef on which Fehenfuri lies. The channel is about 183m wide, with a least depth of 18.3m. Depths in the opening E of the Dorukandu are shoal and irregular; a 4.3m patch lies near the edge of the Dorukandu, about 0.3 mile E of Mafuri.

The E part of Fehendu, bearing 052°, leads from SW towards the opening.

Caution.—Vessels should not attempt to enter the lagoon except through the Dorukandu.

Kardiva Channel

5.31 Kardiva Channel (5°00'N., 73°30'E.), deep and free from dangers in the fairway, lies between Fadiffolu Atol, South Malosmadulu Atol, and Horsburgh Atoll to NW, and Male Atol and Ari Atoll to SE.

Tides—Currents.—The tidal current sets ENE through Kardiva Channel with the flood and WSW with the ebb, at a velocity of 2 knots.

During the Northeast Monsoon, the tidal current is inappreciable during the flood, but the ebb is reinforced by the surface current generated by the monsoon. Similarly, during the

Southwest Monsoon the ebb current is weak or absent and the flood current is strong.

Aspect.—The N side of the E entrance of Kardiva is well-defined by Olivelifur (5°17'N., 73°36'E.), at the SE end of Fadiffolu Atoll. Kardiva, about 19 miles farther SSW, is a good landmark from the E, having two conspicuous palm trees on the N side of the reef upon which it lies. Gaha Faro Reef, on the S side of the entrance to Kardiva, has no landmarks on its N and S sides.

The W entrance of Kardiva Channel is not easily identified as the wooded islets on Ari and Horsburgh Atolls lie several miles within the salient points of their barrier reef. However, **Toddu** (4°26'N., 72°58'E.), an island off the N end of Ari Atoll, can be sighted at a considerable distance, and forms a good landmark in the approach from W.

Caution.—Kardiva was reported (1974) to lie about 2.3 miles SSE of its charted position.

Kardiva (4°58'N., 73°27'E.), formerly known as Karidu, was thickly covered with coconut palms, 14 to 20m high in 1974. There is a township on its N side; its SE side is steep-to.

A reef on the N side encloses a lagoon where local craft are moored. The entrance to the lagoon lies about 0.5 mile NW of the NE point of the island. Landing can only be made on Kardiva by entering the lagoon, as there is generally a heavy surf around the island and reef, except at the lagoon entrance.

Gaa Faro Reef

5.32 Gaa Faro Reef (4°44'N., 73°26'E.), in the form of a small atoll, lies about 1.5 miles N of Male Atoll, from which it is separated by a deep channel, free from dangers in the fairway. **Gaa Faro** (Gafaru) (4°44'N., 73°29'E.), an islet at the E end of the reef, was inhabited in 1970. A clump of trees lies on the reef about 1 mile WSW of this islet.

Two very small openings lead into the lagoon, one on the NW side and another on the N side, about 4 miles E. Above-water rocks mark the E side of the N opening and apparently, the S side of the NW opening.

Male Atoll

5.33 Male Atoll (4°25'N., 73°30'E.), the principal atoll of the Maldive Islands, contains about 50 islets and islands. Several islets, especially in the S part of the atoll, are developed as tourist villages.

The depths within the lagoon are from 40 to 50m; the bottom is of coarse sand except over coral reefs. Shoals within the lagoon are easily discernible in favorable conditions of sun and sea.

Olahali (4°41'N., 73°26'E.), a low bush-covered islet, marks the NW point of Male Atoll. A major channel into the main lagoon lies close E of the islet; it was reported, in 1974, that there appeared to be a least depth of 50m in the center of the channel and that the reef edges could be clearly seen.

Tides—Currents.—During the Northeast Monsoon, a 2 to 3 knot western current sweeps through the channel between Male Atoll and Gaha Faro Reef, causing strong eddies and turbulence where it meets tidal currents from the lagoon.

During this season, it is advisable to pass through the N reef at about slack water.

Kagi, a small wooded islet, lies about 3 miles ESE of Olahali, and 1.5 miles within the lagoon. A good unobstructed channel through the reef lies N of this islet; its entrance is marked by drying rocks, and in 1974, by the stump remains of a pile beacon.

Helengili, a long low wooded islet, lies on the barrier reef about 4.5 miles SE of Kagi. Openings through the reef lie on each side of the islet; in 1974, the N opening was narrow and appeared to have a least depth of 20m, while the S channel was broader, with a least depth of 40m.

Lighted Beacon No. 1, a gray framework tower on a concrete base, lies on the S side of a reef 4 miles SW of Helengili.

Between Helengili and **Mirufuri** (4°27'N., 73°42'E.), there are several deep channels without landmarks to identify them; a vessel may pass through in favorable conditions and keeping a good lookout.

Asdu, in the lagoon, about 3 miles W of Mirufuri, was covered with coconut palms in 1974.

Mirufuri was inhabited in 1974 and wooded with coconut palms. Difuri, close S, was inhabited in 1974 and thickly wooded.

Between Difuri and Male, 20 miles SW, a chain of islands lies upon the reef which is sharply marked by change of water color or, in swell conditions, by breakers upon it.

5.34 Imma (4°18'N., 73°34'E.), inhabited in 1970, and Lankanfushifinolu, about 1.8 miles SW, lie on the same reef with a low islet about midway between.

The best and widest opening in the barrier reef lies between Lankanfushifinolu and Kaduogiri, an island 1.8 miles SW. There are depths of 54m in this channel about 0.6 mile S of Lankanfushifinolu, but a bank with depths of less than 29m extends 1.3 miles N into the channel from Furranafushi (Furena), an island about 0.5 mile SE of Kaduogiri.

A shoal area, about 1.3 miles W of Lankanfushifinolu, has a least depth of 14m. A reef lies 0.5 mile WNW of Kaduogiri, with numerous shoal patches S of it.

An uncharted lagoon lies off the W side of Furranafushi, entered at the SW corner of the fringing reef. Within the lagoon are depths to 9m, with a bottom of sand and coral heads. This lagoon provides good anchorage for small craft. A stone jetty extends from the W end of the island.

Male (4°10'N., 73°30'E.)

World Port Index No. 49200

5.35 Male, at the S end of Male Atoll, is the capital of the Republic of Maldives and is the seat of office of the President whose residence is on Arah (Aramh), a wooded islet about 3.5 miles NNW. A tower, from which a light is shown, lies at the center of Arah. The island is thickly wooded with many modern houses, particularly on its N side. It is almost entirely built up with a network of earth roads. The harbor facilities are on the N side of the island.

Tides—Currents.—From the few observations made in the vicinity of Male, it seems likely that the water movement there is far more influenced by the monsoon currents than the tidal

currents. When the currents are flowing strongly, it seems likely that the tidal currents are only strong enough to increase or decrease the resulting flow and rarely strong enough to reverse its direction. Due to the probability of strong and unpredictable currents, an approach by night was not recommended (1987).

In the channel E of Male, the currents from Wadu Channel set across. During the Northeast Monsoon, a component of the current sets NW through this channel, setting a vessel towards the reef fringing the E side of Male. The flow turns W between Male and Funadu.

It was reported (1972) that this flow commenced 1.5 hours before HW, and ran until 1.5 hours before LW, attaining a maximum velocity of 2.5 to 3 knots at about HW N of Male breakwater, where it sets strongly across the N face of the breakwater. At the same time the flow was weak and variable E of Funadu. Strong sets have also been reported during the Northeast Monsoon in Male Harbor.

During the Southwest Monsoon, a component of the current enters the lagoon through the channel S of Giravaru, flowing out principally through the channel W of Male and between Male and Funadu, and then S into Wadu Channel.

It was reported (1972) that an E set existed until within the line joining Male and Hulule, then slack water between Funadu and Dunidu, when a strong E set was experienced to the anchorage. Four hours after LW, with the flood current tending to oppose the current, a moderate NE flow was experienced in the lagoon.

No observations have been made during the change in the monsoons when the currents could be weak and variable at times, but strong sets may always be encountered.

Aspect.—Male is identified from N and NE by a white mosque and minaret, and radio masts at its SE corner.

The E, S, and W coasts of Male are fringed by an unbroken reef, awash, extending from 23m to 0.2 mile from the S coast.

The N side of the island is protected by a breakwater, about 1.2m high and 4m wide, which is connected to the land at each end. Six passages lead through the breakwater into the harbor with another into a shallow pool at the W end. Lights are shown from beacons, painted in black and white bands, lying on each side of the five E passages.

The inner harbor is used by small local craft and has depths of 1.8 to 3m. The main passage, in the middle of the breakwater and 0.5 mile WNW of Miller Point, the NE point of the island, is 17m wide. In 1975, reclamation was underway on the reef off the E end of Male.

A rough breakwater of heaped coral extends 0.15 mile from the SW extremity of Male. It has been reported (1994) that the reclamation work to the S edge of the barrier reef had been completed. This new harbor area, when functional, would be for the use of inter-island trading boats, cargo lighters, and deep-draft vessels at anchor.

The Custom House lies on the main quay facing the main passage through the breakwater.

Red obstruction lights are shown from the radio masts at the SE end of Male.

Lighted buoys mark the reef SW of Hulule and the reefs extending E of Funadu (Funidu) and Dunidu.

In 1983, it was reported that a conspicuous white house with green roof lies on the SE end of the island, and a prominent red

and white TV tower is situated at approximately 4°10'16"N, 73°30'51"E. Various landfill and reclamation projects are in progress on the W side of Male.

Funadu lies about 0.3 mile N of the E end of Male, and is surrounded by a reef which dries in places. In 1983, it was reported that on the N of the island there is a small tank farm with three large and about six smaller tanks. Dunidu, a wooded islet, lies about 0.8 mile NW of Funadu. In 1983, there was a large tank reported to lie on the E central part of the island, and a breakwater extending about 24.4m N on the N of the island.

Hulule, about 0.6 mile E of Funidu, bears some tall coconut palms; an airstrip runs the full length of the island and joins it to an islet close S. Airport buildings and a small village lie along the central part of the W side of Hulule. The airport is undergoing construction.

A channel, with a depth of 1.5m, gives access to small piers on the W side of Hulule. In 1987, entrance to this channel was prohibited; two large yellow mooring buoys were laid close W. A radio mast, marked by red obstruction lights, lies near the piers. In 1983, it was observed that the runway has been extended approximately 0.6 mile to the N and 0.2 mile to the S; the control tower is a conspicuous landmark. Breakwaters extend N and S from the entrance to the 1.5m channel.

Wilingili, a low wooded islet, lies 1 mile W of Male and is used as a tourist village. It is surrounded by steep-to foul ground extending up to 0.3 mile offshore. The light on the islet is reported to be a good landmark.

The channel between Wilingili and Male has a 5.5m shoal in the middle with a 15.4m patch about 0.4 mile N of it. Tidal currents in this channel are strong and tide rips form near the shoals; navigation of the channel is not recommended.

Ferdo, a bare sandy islet, surrounded by a steep-to reef which dries in places, lies 2.3 miles N of Wilingili. Breakwaters extend from the islet, and in 1974, reclamation work had started and some trees and shrubs had been planted.

A circular reef, about 1 mile SE of Ferdo, appears to contain deep water.

Tulusdu (Thulusdhoo) (4°22'N., 73°38'E.) was reported (1987) to be developing a port; the lagoon has been deepened and its entrance widened with a jetty built. Vessels up to 2,000 dwt were reported using the port. Warehouses were also under construction.

Viligili (Mathidhahuraa) lies 0.5 mile ENE and another islet, with some palms and covered with bush, lies about 1.5 miles WSW.

Pilotage.—Pilotage is compulsory for all vessels over 100 grt and is available daily from 0630 to 2200. Pilots board in position 4° 10'N, 73° 32'E. A 3 hour ETA is required.

Regulations.—Vessels must report their ETA 48 hours in advance.

Vessels may not enter or depart the harbor from 1800 until 0600 without first obtaining permission from the coast guard on VHF channel 16.

Anchorage.—Vessels anchor in the designated anchorage areas best seen on the chart.

Small vessels, during the Southwest Monsoon, can moor on the E side of the circular reef about 0.8 mile NW of Dunidu. A vessel can secure to an anchor set in the coral of this reef, with a stern anchor laid out to E. Two anchors on the SE side of Dunidu can be used in the same way.

Directions.—The channel close E of Male is the recommended approach for all vessels, except those of low power. The fairway is about 0.4 mile wide between the reefs extending SE of Male and S of Hulule airstrip. The channel W, between Male and Wilingili, is not recommended.

Male Passage is approached with the E side of Dunidu bearing 337°, and open NE of Funadu until the S end of Hulule runway bears 085°. Then steer through the middle of the channel between Funadu and Hulule, and as required round the N side of Funadu to approach the anchorage. The outline of the reefs is very distinct.

If approaching Male from W, enter Kaashidoo (Kardiva) channel between **Toddu** (4°26'N., 72°57'E.) and Horsburgh Atoll, 25 miles N of it. Pass close N clear of Toddu and then steer SE for Wadu Channel. When Male island is identified and approached, follow the directions as mentioned above.

In 1983, it was reported that because of the extended runway S on Hulule Island, a more appropriate approach through Male Passage should be made from farther SE, maintaining a mid-channel course. A vessel, at the approach on course 345°, reported observing a current setting NNE at 3.5 knots until the S tip of the runway was abeam to starboard, when a strong S to SW set of 4 knots was encountered with numerous eddies between Miller and Wild Points. To remain in mid-channel and to counteract the set and drift, a course of 008° was steered, thereafter, adjusting as necessary to the anchorage.

It was reported (1978) that the reef surrounding Wild Point, the SE tip of Male, had extended E and a depth of 5.9m was reported 0.3 mile E of the point.

Low-powered vessels, sailing vessels, and vessels arriving from E, may use the opening in the reef 6 miles NNE of Male. Steer to pass about 0.6 mile S of Lankanfushifinolu, then N and W of the reef lying 0.5 mile NW of Kaduogiri. Then steer S to pass W of Vehemanafushi (Vehamafuri), a wooded islet 3 miles N of Male, and thence W of Dunidu to the anchorage.

5.36 Giravaru (4°12'N., 73°24'E.), an islet covered in scrub and with a few coconut palms, lies on the SW side of Male Atoll, about 0.5 mile within the outer edge of the barrier reef. In 1974, a small bare islet lay at the extremity of the reef extending 1 mile W of Giravaru; a similar islet lies 1 mile S of Giravaru.

A good, easily discernible channel, S of Giravaru, with a least depth of 48m in its center, leads through the barrier reef. A wider, less deep channel lies NW of Giravaru; a shoal patch, with a least depth of 3.4m, lies in the channel, about 0.7 mile NW of Giravaru, where it broadens out into the lagoon.

Between Giravaru and Akirifuri, about 26 miles N, several low bush-covered islets, about 7m high, lie on the W fringing reef, giving effective warning of the reef lying about 0.2 mile outside them.

Several openings into the lagoon lie along this stretch of coast. The largest opening is abreast Hembadu, a heavily-wooded islet, about 17 miles N of Giravaru and 2 miles within the lagoon; the latest maps (1970), based on aerial photography, indicate dangers in the entrance to the W of those charted near Hembadu.

A low islet, covered in trees and scrub in 1970, lies on the barrier reef 6 miles SSW of Hembadu; a sandbank, similarly wooded, lies about 2 miles farther SSE.

Akirifuri (4°38'N., 73°24'E.) is low and covered with bush-ess; there is a small but safe opening on each side of this islet and another 1 mile ENE of it.

Maps based on 1968 aerial photography indicate that other openings between Giravaru and Akirifuri have dangers within the channels or close within the atoll abreast them. A survey vessel observed similar indications of such dangers in 1974.

Waddu Channel

5.37 Waddu Channel (4°09'N., 73°27'E.), between the S end of Male Atoll and the N end of South Male Atoll, about 2.3 mile S, is very deep and free from dangers.

The tidal currents in the channel are very strong, the flood setting E and the ebb W. During the monsoons, the tidal current accelerated by the prevailing current, setting W during the Northeast Monsoon and E during the Southwest Monsoon, attains a velocity of 4 knots, causing severe tide rips.

South Male Atoll

5.38 South Male Atoll (4°00'N., 73°25'E.) comprises about 25 islets, of which five were inhabited in 1970. Most of the islets lie along the E side, but some are on the W side. Safe passages are on one or both sides of all these islets, except for the four or five islets on the SE part of the atoll. Almost all the islets are wooded, with many palm trees.

The lagoon is deep, but is encumbered with coral reefs, which may be avoided in favorable light with a good lookout at the masthead.

Wadu (4°07'N., 73°27'E.), in the middle of the N side of the atoll, has good openings in the reef on each side. There are some sandbanks on the reef between Wadu and Huras, about 4.5 miles ESE.

A good passage, with a depth of 20m in the fairway, lies about 1 mile S of Huras. This channel was reported (1917) to be narrower than charted and this is confirmed by the latest maps (1970) based on air photography; it should therefore be used with caution. Hembunda (Eboodhoo) is an uninhabited islet about 1.5 miles SW of Huras (Eboodhoofinloho). A shoal depth of 5m is reported to lie SE of Hembunda, between the island and the reef, therefore restricting passage to the S.

Between the S side of this opening and the SE extremity of the atoll, there are a few openings with several islets and sandbanks on the E side of South Male Atoll.

5.39 Guru (Gulhi) (3°59'N., 73°30'E.), Mafuri and Guradu, about 3 and 5.5 miles, respectively, farther SSW, were inhabited in 1970.

A good channel, 0.5 mile wide with a least depth of 37m, lies at the SW end of the atoll; this channel lies between the W end of the reef forming the S side of the atoll, and the E side of a detached reef NW and on which Rocky Islet lies. Rocky Islet, according to the latest maps (1970) prepared from aerial photography, may be much smaller than charted or may have disappeared. In 1987, this islet was reported to be nearly submerged at HW.

Warigili, an islet remarkable for a bushy sandbank extending from its W side, lies about 8 miles N of the above opening. The widest of several openings in the W side of the atoll lies about

4 miles N of Warigili; a sandbank lies on the S side of this opening.

Ari Atoll

5.40 Ari Atoll (3°55'N., 72°50'E.) consists of many islands and islets, of which 22 were inhabited in 1970. The principal occupations are catching turtles and weaving sails.

There are many good passages into the lagoon on all faces of the encircling reef, except the S face, where there is only one break.

The atoll lagoon is much encumbered with coral reefs, some with depths of 3.7 to 5.5m; others dry, leaving lagoons within. The coral heads may be avoided on a clear day with a good lookout aloft.

The influence of spring tides is felt in the lagoon.

The channel between Ari Atoll and South Male Atoll is deep and sheltered from the ocean swell.

Toddu (4°26'N., 72°57'E.), an island about 12.5 miles NE of the N end of Ari Atoll, was inhabited in 1970 and partially wooded. The island may be sighted from a considerable distance. It was reported (1934) to be larger than charted, and this is confirmed by the latest maps (1970) based on aerial photography. These also show the reef to extend about 0.6 mile farther W than charted.

Rasdu Atoll

5.41 Rasdu Atoll (Rasdho Atoll) (4°16'N., 73°00'E.), about 5.5 miles S of Toddu, is connected with the NE part of Ari Atoll by a submarine plateau with depths of 183 to 274m. It forms part of Ari Atoll for administrative purposes.

In 1987, Rasdhoo was reported visible from a distance of 20 miles.

The channel between Rasdu Atoll and Toddu was reported (1963) to be about 1.3 miles wider than charted.

Rasdu (4°16'N., 73°00'E.) and Kuramati, both inhabited in 1970, are islets on the S side of the atoll; the opening between them can be used only by vessels if local knowledge is available. In 1963, Rasdu had trees 24m high, and Kuramati was thickly wooded with some very tall trees.

Weligandu, about 2.5 miles NNE of Rasdu, had trees 14m high in 1963. The other opening into the lagoon lies about 1 mile N of Weligandu, and has a least depth of 14.6m in the fairway.

The lagoon is deep, but it is encumbered with coral reefs.

Gaha Faro (4°16'N., 72°45'E.), a large reef with a lagoon within, forms the N side of the W side of the atoll; a similar but smaller reef lies about 2.5 miles E. Observations in 1940 revealed depths of 16 and 23m in place of much greater depths in the original survey and thus the probability that the above reefs are joining by a ridge of fast growing coral.

Caution.—Caution is necessary in the vicinity of the N end of Ari Atoll, because of the changes reported.

5.42 Ukulahu (Ukulhas) (4°13'N., 72°51'E.), at the NE end of the atoll, was inhabited in 1970; a good channel lies W of the islet. An islet about 1 mile N of Ukulahi had almost disappeared in 1970. A sandbank lying about 1 mile E of Ukulhas was reported (1987) a good radar target.

From an islet about 1 mile E of Ukulahu, a chain of small reefs extends about 6.5 miles SSE to Toroka (Beyrumadivaru), the N islet on the E side of the atoll. A red obstruction light was reported (1987) shown from a radio mast on Bathala (Butala), lying about 3.8 miles S of Toroka, was visible from a distance of 12 miles.

Midu, about 15.5 miles S of Toroka, had a landing place about the center of the S side abreast a village; there appears to be another at the W end. A strong current sets through the channel S of Midu.

Aumedu, about 3.5 miles S of Midu, was inhabited in 1970 and had breakwaters on its N side. Mahiadu, about 2 miles farther S, was inhabited in 1970 and had breakwaters on its N and S sides.

Digura (3°33'N., 72°55'E.), on the SE side of the atoll, and Kurafuri and Didu, farther SW, were inhabited in 1970.

Numerous passages lead into the E side of the lagoon and are about 1 mile apart. Some are narrow, but all are safe if a good lookout is kept. The passage N of Digura is the widest and has a 3.7m patch on its S side.

5.43 Mamigili (3°30'N., 72°50'E.) and Ariyaddu, about 0.5 mile E, lie at the S extremity of the atoll and were inhabited in 1970. The channels into the lagoon on either side of Ariyaddu, though narrow, are free from dangers. The E channel has a least depth of 51m and the W channel a least depth of 48m in the fairway. A small reef lies about 1.5 miles N of Mamigili.

The W side of the atoll, in a general N-S direction, is composed of large reefs enclosing lagoons. The passages between are mostly wide and deep.

Mandu, 15 miles NNW of Mamigili; Himendu, 12 miles farther N; Malos, 4 miles N of Himendu; and Feridu, 4 miles farther N, were all inhabited in 1970.

An opening in the reef about 7.5 miles WNW of Mamigili is narrow, as are the openings 2 and 3 miles farther N.

Passages, about 2 miles wide, lie N and S of the reef on which Mandu lies. All the rest of the passages on the W side are deep and safe.

Matiwari (4°12'N., 72°44'E.) and an unnamed islet, about 1.8 miles ESE, were inhabited in 1970. Good anchorage was obtained in 1942 about 2 miles E of Matiwari.

Fulidu Channel and Ariyaddu Channel

5.44 Fulidu Channel (3°45'N., 73°25'E.), between the S end of South Male Atoll and the N end of Felidu Atoll, about 7 miles S, is deep and free from dangers.

Ariyaddu Channel (3°25'N., 72°53'E.), between the S end of Ari Atoll and the N end of Nilandu Atoll, about 9.5 miles S, is also deep and free from dangers.

Tides—Currents.—Tidal currents, which are very strong during spring tides, set E through Fulidu Channel and Ariyaddu Channel with the flood, and E with the ebb. The tidal currents are periodically retarded or accelerated by the current.

Felidu Atoll

5.45 Felidu Atoll (3°30'N., 73°30'E.) consists of several islets, seven of which were inhabited in 1970. The principal occupation is net weaving.

Fulidu (3°41'N., 73°24'E.), an islet at the N point of the atoll, is well-wooded, with a conspicuous clump of trees at its center, and was inhabited in 1970.

There are several safe but narrow openings along the N and NE sides of the atoll. The opening 1.5 miles E of Fulidu has a least charted depth of 9.1m in the fairways. In 1987, it was reported that patches with minimum depth of 6m existed and the area was breaking heavy seas. Two miles further ESE another opening has a submerged rock in mid-channel. There is a channel 1 mile E of **Digeri** (3°38'N., 73°28'E.), and on each side of Alimata, about 3 miles S. In 1987, the N channel was not recommended.

Tinadu, about 6.5 miles SSE of Alimata, with Felidu and Keadu farther SSE, are three islets at the head of the bight on the NE side of Felidu Atoll. The three islets were inhabited in 1970; Felidu is the island of the Chief of the Atoll. The openings between these islets and the reefs between are narrow and a heavy swell sets on them during the Northeast Monsoon; the currents and tidal current are strong.

Between Keadu and Foteo, at the E extremity of the atoll, there are other openings, narrow and without landmarks. This part of the barrier reef as well as the whole S face of the atoll may be considered one continuous reef.

Foteo was inhabited in 1970 and has some tall trees on it.

Caution.—The latest maps confirm earlier reports that the NE edge of the reef N of Foteo extends about 1 mile farther NE than charted.

5.46 Rakidu (3°19'N., 73°27'E.), the S islet of the atoll, was inhabited in 1970. There is a very narrow and deep channel, leading into the lagoon, on each side of Rakidu; both are free from dangers in the fairways.

From the W channel at Rakidu to the W point of the atoll, there are nine openings in the barrier reef, but there are no landmarks to help locate them. Lighted Beacon No. 2 lies on the reef at the W point of the atoll.

Several openings in the NW side of the atoll are not easily seen. Gunawari, about 4 miles SW of Fulidu, has two conspicuous palms showing over dense scrub; an islet, about 1 mile ESE, has eight coconut palms.

The latest maps (1970), based on aerial photography, confirm an earlier report that the reef between Gunawari and Fulidu has extended about 1 mile NW.

Wataru Channel

5.47 Wataru Channel (3°15'N., 73°30'E.), between Felidu Atoll and Mulaku Atoll, about 8 miles S, is divided into two channels at its W end by Wataru Reef. The S channel is wider and both channels are deep. The currents and tidal currents are strong. Off Wataru Reef, heavy W swells are experienced.

Wataru Reef is a small atoll with a small opening at its S end, which can only be used by boats. An islet lies on each side of the opening; the E islet had palms on it in 1970. According to the latest maps, the W islet may have disappeared; they also show the reef to be about 1 mile longer in an E-W direction than charted.

Rakidu, the S islet of Felidu Atoll, marks the N side of Wataru Channel.

Mulaku Atoll

5.48 Mulaku Atoll (3°00'N., 73°29'E.) consists of several islets, ten of which were inhabited in 1970. All the islets lie on the barrier reef, except Mulaku, the largest islet, which lies close within the E side of the lagoon.

There are many coral reefs in the lagoon, which has a sandy bottom.

The reefs on the S and E sides of the atoll were reported (1920) to be extending seaward; the latest maps prepared from aerial photography confirm this.

Between the NW extremity of the atoll and Digaru, about 11 miles ESE, there are three narrow openings without nearby islets to identify them. Digaru and Maduwari, about 0.8 mile ESE, were inhabited in 1970. Close SE of the latter two islets are channels about 45.7m wide, with a least depth of 9.1m.

Raimandu, inhabited in 1970, lies about 1 mile SSW of the NE point of the atoll.

An opening in the barrier reef lies between the islets of Vevaru and Muli, about 8.5 and 10.5 miles, respectively, SSW of Raimandu. The opening is narrowed to about 0.6 mile by the reefs extending from both islets. There is a deep channel through the opening, but the entrance is intricate, with a least depth of 5.5m in places. Mulaku lies close NW of the opening; a village lies on the N side of the island.

Landing can only be made on the W side of the islets. The nearest entrance to the lagoon lies 2 miles W of Kolufuri.

From **Kureli** (2°47'N., 73°21'E.), inhabited in 1970, the reef extends N for 24 miles, with 14 safe openings into the lagoon. Some of these openings are small, but none has a depth of less than 18.3m.

Tuvaru, about 7 miles N of Kureli, was inhabited in 1970. An opening, close S of the islet, forms a good channel with depths 55m, but there are coral reefs just within the entrance.

Nilandu Atoll

5.49 Nilandu Atoll consists of North Nilandu Atoll and South Nilandu Atoll, separated by a deep channel 3.5 miles wide. This channel is free from dangers. The islands of both atolls are mostly covered by vegetation with many coconut palms.

5.50 North Nilandu Atoll (3°31'N., 72°56'E.) has few islets on the barrier reef. There are several islets in the lagoon, which is deep but encumbered with drying coral reefs.

The islet of **Ari Faro** (3°20'N., 72°54'E.) marks the N end of the atoll. An opening, with depths of 27 to 37m, lies about 1.3 miles W of Ari Faro, and a broad deep opening, with a reef in the middle, lies on the E side of Ari Faro.

From the latter opening, around the E boundary of the atoll to its S point, there are openings from 1 to 4 miles apart; all have moderate depths except the narrow passage S of Farna (3°19'N., 72°59'E.), which has a charted depth of 5.5m.

Biladu (3°09'N., 72°59'E.), about 2 miles within the lagoon, was inhabited in 1970 and had a boat harbor on its NW side.

Nilandu (3°05'N., 72°54'E.), the S island of the atoll, was inhabited in 1970. The S opening into the lagoon, E of Nilandu, is 1 mile wide with depths of 12.8 to 37m in the fairway. Daumbuda, about 2 miles ENE of Nilandu, lies on the reef bor-

dering the E side of the opening. Hekara, Maguda (the chief's island), and Daumbuda were inhabited in 1970.

A wide, deep passage lies at the N end of the reef extending 4 miles NNW from Nilandu. On the N side of this passage is a circular reef, N of which is a deep narrow passage.

Hemiti, about 12 miles NNW of Nilandu, is the W islet of the atoll and was inhabited in 1970. An opening, with a depth of 24m, lies N of Hemiti and is bounded by the edge of the reef projecting 1.5 miles N of the islet and the reef N.

There are some shoals in the opening about 6 miles SSE of Farna, between Feartu and Mawafuri. The latter island is much smaller than charted due to erosion by the sea, but there were a few palms on it in 1970.

5.51 South Nilandu Atoll (2°50'N., 72°56'E.) has many islets on the barrier reef on the E side of the atoll, but few on the W side. The islets on the SE side of the atoll are closely grouped.

The atoll has many openings in the barrier reef but is inaccessible on its SW side.

The lagoon is deep but encumbered with large and small coral reefs, some of which dry; these reefs are steep-to and easily discernible. Most of the many islets in the lagoon are in the N part and about 3 miles within the lagoon.

Furi (3°01'N., 73°01'E.), the N islet on the E side of the atoll, was uninhabited in 1970. There is an opening close SE of Furi.

From the latter opening the reef, with six other openings and about 20 islets upon it, extends to Kandimas, about 16 miles S.

A narrow opening on the reef, between Kandimas and Wani, about 1 mile SW, has a least depth of 37m in the fairway. The latter islet was inhabited in 1970.

Another opening, about 2.8 miles farther SW and NE of Maimbudu, has a least depth of 12.8m in the fairway.

5.52 Kuda Huvadu (2°41'N., 72°54'E.), at the S extremity of the atoll, was inhabited in 1970 and is the atoll chief's island. The opening, E of the island, is about 1.5 miles wide with a least depth of 16.5m in the fairway.

Huludali, about 12 miles NNW of Kuda Huvadu, was inhabited in 1970 and has openings N and S of it. The S opening, about 0.2 mile wide between the edges of the reef, has a least charted depth of 27m. The N opening, between Huludali and Madali, about 1.3 miles NW, is about 0.8 mile wide between the reefs, and has a least depth of 35m in the fairway; this opening is better defined than the opening S of Huludali. A reef extends about 0.8 mile E of Madali.

There are three openings on the barrier reef between Madali and Furi, about 12.5 miles NE, but there are no other islets on this part of the reef. The NW side of the atoll is unsafe to approach, as some islets inside the lagoon have trees on them visible from a distance, but they lie too far within to provide safe navigational marks.

Dures and Rimbudu lie within the lagoon, about 3 and 4 miles, respectively, NE of Madali; they are called the Jeweller's Islands because the inhabitants were at one time the chief jewellers of the Maldive Islands. Rimbudu was inhabited in 1970.

Anchorage NE of Rimbudu is more comfortable in a SW swell than that S of the island.

Kudahuvadu Channel

5.53 Kudahuvadu Channel (2°40'N., 73°15'E.), between Mulaka and Nilandu Atolls to N, and Kolumadulu Atoll to S, is deep and free from dangers. It is about 15 miles wide at its E entrance and about 9.5 miles wide at its W entrance.

The W entrance of the channel is well-defined on its N side by Kuda Huvadu; the S side of the entrance is not so well-marked.

Tides—Currents.—Currents in Kudahuvadu Channel are more obstructed than those in the channels farther S because of the nearby atolls, and consequently are more uncertain in direction and their velocities are greater.

Tidal currents set E through the channel with the flood and W with the ebb.

Kolumadulu Atoll

5.54 Kolumadulu Atoll (2°23'N., 73°08'E.) has several openings in its barrier reef; there are islets on its E, S, and W sides, but very few on its N side. The lagoon is encumbered with numerous drying coral reefs.

The few islets on the N side of the atoll were wooded in 1970, and had many coconut trees.

Kandufuri (2°32'N., 73°00'E.) has openings in the reef about 1.3 miles WSW and close E; both openings are deep. Kandufuri was reported to be a good radar target at 15 miles.

Buruni, about 8 miles E of Kandufuri, has a channel close E with a depth of 12.8m. Another opening, about 2.5 miles E and close W of Koragandu, has a least charted depth of 29m, but care must be taken to avoid reefs about 1 mile S of the opening.

Olugeri lies about 6 miles ESE of Karagandu. The E entrance on the N side of the atoll lies close E of Olugeri, and has a least charted depth of 9.1m.

Wilifuri, at the NE end of the atoll, was populated in 1970.

From close N of Wilifuri, the reef extends about 12 miles S to Diyagili and has no openings. Diyagili and Mudifuri, about 2 miles NE, are inhabited.

A good channel, about 0.7 mile between the reefs and with a least depth of 14.6m, lies close SW of Diyagili; there is a tide rip across the entrance.

Guradu, on which there is a village, lies 1 mile SW of Diyagili.

Between Guradu and Timarafuri, about 13 miles SW, there are no openings in the barrier reef; numerous islets lie on this reef.

There are three openings between Timafuri and Veimandu, about 3 miles WSW; the latter two islets are inhabited. The channel close W of Timafuri has a least charted depth of 68m and is free from dangers. The channel, about 1 mile farther W, is not recommended; it has a least depth of 11m and care must be taken to avoid rocks on its E side. A broad, deep channel lies about 1 mile farther W and close E of Veimandu, but a large coral patch, with off-lying rocks, lies about 0.8 mile within the entrance.

The barrier reef then extends from Veimandu to Naraka, about 8 miles W, and then about 5 miles NNW to Hirilandu.

The most convenient entrance from the W, and the only one on the W side, lies between Hirilandu and Kandudu, about 2 miles N. The entrance is constructed by a reef, partly above-

water, in the middle of the opening, with an islet about 1 mile E. Vessels may best avoid the reef by keeping well to the S or N sides of the opening, while maintaining a sharp lookout for the reefs extending N from Hirilandu and S from Kandudu.

Anchorage.—There is anchorage, according to the prevailing wind, on the E side of Hirilandu or the E side of Kandudu, but care must be taken to anchor clear of coral patches.

Veimandu Channel

5.55 Veimandu Channel (2°10'N., 73°20'E.), between Kolumandulu Atoll and Haddummati Atoll, about 16 miles SE, is deep and free from dangers, but it is inadvisable to proceed through it at night.

Tides—Currents.—Tidal currents in this channel have a velocity of about 2 knots at springs, but this velocity may be accelerated or retarded by the prevailing current.

A current of 1.8 to 3.5 knots, setting in 070° direction, was experienced in Veimandu Channel in October, 1960.

Haddummati Atoll

5.56 Haddummati Atoll (1°55'N., 73°25'E.) has six openings in the barrier reef surrounding it, four of which are suitable for large vessels. The lagoon is encumbered by many coral reefs, but these can be seen by a lookout at the masthead on a clear day with the sun behind.

Isdu (2°07'N., 73°35'E.), at the N extremity of the atoll, had several villages on it. It was reported (1963) that Isdu lies about 3 miles NNW of its charted position.

The inhabited islet of Mabadu lies about 5.5 miles SSW of Isdu. Passages lie N and S of Mabadu; the N passage is shallow, but the S passage is about 0.2 mile wide, with depths of 14.6m.

From the latter opening, the barrier reef extends about 12.5 miles SSW to close W of Gadu, at the E opening of the S entrance to the lagoon. Of the several islets on this section of reef, **Mandu**, **Baresdu**, **Gang**, and **Funadu** are inhabited. **Gang** and **Funadu** were reported (1970) to lie about 2 miles NW of their charted positions.

Funadu was reported to be a good radar target at 18 miles.

The S opening into the lagoon lies between the reef extending 0.5 mile SW of Gadu and the reef close E of Hitadu, about 2.5 miles SW. The opening is divided into two passages by three reef-fringed islets lying just within and on the W side of the entrance. The E passage has a least depth of 55m and the W passage has a least charted depth of 27m. Several coral reefs lie in the fairway W of the three islets, and care must be taken if using the W passage.

5.57 Hitadu (1°48'N., 73°25'E.), on the W side of the S opening, is the atoll chief's island; with **Kunahandu**, close W, the two islands appear as one. In 1984, a light was reported on the W end of Hitadu Island.

The barrier reef extends from close E of Hitadu for about 12 miles NW to about 1.5 miles N of Mavaru. The latter island, at the W extremity of the atoll, is the principal island.

Anchorage.—Convenient anchorage has been reported, in 44m, N of Hitadu. Landing was easily made on a sandy beach after passing over the reef which extends about 183m offshore.

Good anchorage, sheltered from W winds, can be found in 31 to 37m, about 0.8 mile E of Mavaru.

One and Half Degree Channel

5.58 One and Half Degree Channel (1°30'N., 73°20'E.), between Haddummati Atoll and Suvadiva Atoll, about 52 miles S, is deep and free from dangers.

A detached shoal, with a depth of 15.5m, was reported (1963) to lie about 21 miles N of the N of Suvadiva Atoll.

Currents setting E, with velocities up to 3.5 knots, have been experienced in October and November. During the Northeast Monsoon period (December to March), a set W of nearly 4 knots was reported in 1972.

Suvadiva Atoll

5.59 Suvadiva Atoll (Huvadu Atoll) (0°30'N., 73°15'E.) is one of the largest of the Maldive Islands, and also one of the unhealthiest of the atolls. Elephantiasis is said to be common and cases of leucodermia have been reported; isolation of such cases is strictly enforced by the government.

Many islets are on the barrier reef and within the lagoon, but not all are inhabited. The lagoon has greater depths than the other atolls of the Maldive Islands, and is less obstructed by coral reefs.

The atoll is the center of the Maldivian mat industry, as the rushes from which the mats are made are found in great quantities.

The N of the atoll is bounded by detached reefs, with a few islets about 2 miles within. There are several safe passages, but as there are no islets on this portion of the barrier reef to provide landmarks, a careful lookout is necessary.

From its N point on the E side, the barrier reef extends about 11 miles SSE and is impassable. **Mametu**, about 4.5 miles from the above N point, consists of two islets, and are the first islets to be seen when approaching from NE.

Wiringili (0°45'N., 73°23'E.), densely inhabited in 1970, lies at the S end of the impassable reef. **Kudu** lies about 0.5 mile farther S. There are passages N and S of **Kudu**. The N passage is about 0.2 mile wide with a least depth of 22m, and the S passage is about 0.3 mile wide with a least depth of 24m.

Between **Kudu** and **Kandu Huludu**, about 23 miles SSE, there are a number of openings in the reef and numerous islets lying on it. Of the islets, **Nilandu**, **Dandu**, **Hura Mula**, **Kondai**, **Diaddu**, **Mawaru**, and **Kandu Huludu** were inhabited in 1970.

It was reported (1963) that the islands between **Diaddu** (0°29'N., 73°30'E.) and **Kubura**, about 5.5 miles S, were about 3 miles E of their charted positions.

A passage, about 0.5 mile wide, with depths of 12.8 to 14.6m in the fairway, lies between **Kandu Huludu** and **Huluwarolu**, about 1 mile WSW.

From the NE end of **Huluwarolu**, the barrier reef extends about 5.5 miles SW, and just within its SW end is an islet called **Gadu**, inhabited in 1970. Several islets are on this part of the reef, and from the offing appear as one. A narrow passage SW of **Gadu** has a least depth of 3.6m in the fairway.

5.60 Gan (0°17'N., 73°22'E.), inhabited in 1970 and the largest island of the atoll, lies about 1 mile W of **Gadu**.

Gan Channel, W of Gan, is about 1.5 miles wide, with a least depth of 55m in the fairway. An islet, about 2 miles NNW of the SW end of Gan, can be passed on either side, but care must be taken to avoid a reef extending 1.3 miles SSW of it, and also Low Bushy Island off the W end of this reef. Inside the entrance of this channel, the lagoon is encumbered with islands and reefs all plainly visible from aloft in favorable light.

Several channels are in the barrier reef, between the W side of the entrance to Gan Channel and Wadu, about 7 miles WSW. The channel between Rasfanu, 6 miles W of Gan, and Kuri, about 1.8 miles farther W, has a least depth of 37m and leads N.

Wadu, inhabited in 1970, is the site of ancient mosques and burial places; the barrier reef extends about 2.5 miles WSW of Wadu. The channel into the lagoon, close W of the latter reef, has a least depth of 12.8m in the fairway.

Matoda, about 6 miles W of Wadu, lies on the W end of the S coral reef of the atoll. This reef contains several islets and extends about 4.3 miles ESE from Matoda.

Fiori (0°14'N., 73°05'E.), inhabited in 1970, lies about 1 mile W of Matoda. A deep channel, about 0.3 mile wide and fringed by reef, lies between the two islets.

From Fiori, the reef extends about 7 miles NW to Nadale, and then about 10 miles NNW to Madaveli; this portion of reef is so densely encumbered with small islets as to appear as a single large island from some directions.

Kandudu Channel, between Madaveli and Kandudu, about 1 mile N, is the more convenient and principal entrance into the lagoon. It is about 0.8 mile wide, with a least depth of 11m.

Havaru Tinadu, about 4 miles N of Madaveli, is well-wooded, very low, and swampy in parts. It is densely populated and reported to be the seat of government of the atoll, with radio communication with Male. From SW or W, this islet may appear as the N point of the atoll, because none of the low-lying islets N of it are wooded.

Between Havaru Tinadu and Mafuri, about 21 miles NNE, the barrier reef recedes to form a bight. There are numerous openings into the lagoon on the NW side, but no useful landmarks; however, a vessel might pass through one of these openings in an emergency with a good lookout at the masthead and with favorable light conditions.

5.61 Mafuri (0°50'N., 73°08'E.), the principal islet on the NW side of the atoll, was densely inhabited in 1970. Its fringing reef extends about 1 mile N of the islet. Landing is at the village near the middle of the E side of the islet. The boat channel is not marked and only boats of shallow draft can land here at LW.

Hibadu, within the lagoon and about 3.5 miles E of Mafuri, was uninhabited in 1970 and very unhealthy. It lacks palm trees but is marked by tall luxuriant trees.

Anchorage.—During the Northeast Monsoon, sheltered anchorage can be found on the W side of **Nilandu** (0°38'N., 73°23'E.). Vessels with local knowledge can enter the lagoon on either side of the reef on which Nilandu lies; care must be taken to avoid a coral reef that lies in the middle of the N channel. Anchorage can also be found on the W side of Kondai about 10 miles SE, but local knowledge is necessary.

Good anchorage can be obtained about 0.5 mile NW of Gadu and also off Gan.

Hondedu (0°27'N., 72°57'E.), S of Madaveli, affords good anchorage, in 49 to 64m, on its E side during the Southwest Monsoon; local knowledge is necessary.

Anchorage may be obtained in the NW part of the lagoon, in 18.3m, with Mafuri bearing 267°, distant 1 mile.

Equatorial Channel

5.62 Equatorial Channel (0°00', 73°15'E.) is the name generally applied to the channel between Suvadiva Atoll and Addu Atoll, about 46 miles S, but the name should be more properly applied to the channel between the S point of Suvadiva Atoll and Fua Mulaku, which lie about 12 miles N and 16 miles S, respectively, of the Equator. There are no known dangers between Suvadiva Atoll and Addu Atoll.

Tides—Currents.—Strong E and W sets, with velocities up to 5.5 knots, have been reported in Equatorial Channel, but in its S part the easterly counter equatorial current, with a velocity up to about 4 knots, seems to prevail.

Fua Mulaku Island

5.63 Fua Mulaku Island (0°17'S., 73°26'E.) is wooded and inhabited. In 1968, the island was reported to lie about 3 miles WNW of its charted position. In 1963, the island was reported to extend 1.5 miles more in a NW-SE direction than shown on the chart; recent air photography (1969) confirmed an extension in these directions of 1 mile.

Tides—Currents.—Tidal currents in the vicinity of Fua Mulaku set W on the ebb and E on the flood, but are little felt except in retarding or accelerating the current.

Fua Mulaku is steep-to on its W, N, and E sides, but a shelving bank, on which the sea breaks heavily up to 0.8 mile offshore, extends about 1.5 miles SSE from the S end of the island. This bank, composed of hard sand, with small coral rock is steep-to.

Anchorage.—Anchorage can be obtained during moderate weather, in 11 to 12.8m, on the S end of the shelving bank.

A landing place on the E side of the islands can be recognized by a collection of boat sheds. Landing on the W side is dangerous and should not be attempted.

Addu Atoll

5.64 Addu Atoll (0°39'S., 78°10'E.), the S atoll of the Maldiv Islands, is fertile and consists of many islands and islets lying on a barrier reef enclosing a lagoon which provides good anchorage.

The barrier reef, which dries, extends about 0.5 mile seaward of the islands. Four deep channels lead through the barrier reef into the lagoon, which has general depths of 18.3 to 75m.

The islands and islets on the W side are more densely wooded than those on the E side, which are covered with scrub.

Good radar returns have been reported from Addu Atoll at 11 miles

Winds—Weather.—Wind direction has a seasonal pattern not conforming to that of the monsoon. Winds from NNE predominate in January and February, backing to W in March, April, and May and to S in July and August. In September, the predominant direction veers to become W in October and

November, and N by December. Wind speeds are generally below 15 knots, with greatest mean speeds in May and October. Occasional gusts exceeding 40 knots occur at any time of year in association with rain showers from SW or NW.

Winds from E are rare and usually light.

Tides—Currents.—Addu Atoll and Equatorial Channel lie in the N fringe of the Equatorial Countercurrent. The predominant direction of the current appears to be E or NE throughout the year, but observations are scanty and marked variations no doubt occur.

Observations suggest the current increases in strength within 50 miles from the atoll.

Approaching Addu Atoll from W in approximate latitude 0°45' S, a vessel reported (1965) that the countercurrent was running at 1 knot or less. When E of meridian 72°E, the current increased setting ENE at an estimated 3 knots and possibly increasing to 5 knots when about 30 miles W of Gan.

The flood current sets strongly into the lagoon through Wilingili Channel and out of the lagoon through Gan Channel. The ebb current sets out through both channels; thus the current through Gan Channel is continuously out of the lagoon.

In Kuda Kanda Channel, the current sets in with the flood and out with the ebb, but in Man Kanda Channel it sets continuously out of the lagoon. The tidal current in Man Kanda Channel is reported to attain a velocity of 5 knots.

The current sets strongly across the entrance to Gan Channel, usually in an E direction, but after a spell of E winds a set to the SW is experienced.

The tidal rise at Addu Atoll is 1.2m at MHWS and 0.8m at MHWN.

5.65 East side.—Midu (0°35'S., 73°14'E.), the NE islet of the atoll, is thickly wooded (1973), except near the village at its NW end and near the village of Huludu at its S end.

Heratera, a narrow island, thickly wooded (1973) in its N part, extends about 2.5 miles S from the S end of Midu.

Kalu Hera and Mulikadu, islets about 0.2 mile and about 1 mile S, respectively, of the S end of Heratera, each had a prominent coconut palm on it in 1973. The barrier reef extends about 0.8 mile SW of Mulikadu.

Wilingili, an island with its N end about 1.4 miles SW of Mulikadu, lies on a detached reef. The NE part of the island is covered with scrub and is heavily wooded. The island was uninhabited in 1973, but is sometimes visited by fishermen. Wilingili Channel, an opening into the lagoon, lies NE of Wilingili. Gan Channel, another opening, lies SW of Wilingili.

5.66 Gan (0°41'S., 73°10'E.), at the S end of Addu Atoll, lies about 1 mile W of the SW end of Wilingili. The island was lent in 1960 to the British Government as a staging post for the Royal Air Force. The British presence on the island ceased on March 31, 1976.

Aspect.—The island is very fertile, with many palm and casuarina trees on its NW side, but the S part is covered with scrub. The N shore is lined with buildings associated with the airfield on the island. A conspicuous clump of casuarina trees stood at the SE end of the island in 1973.

Numerous radio masts, with elevations of 40m, some of which are marked by red obstruction lights, are situated on the

S side of the island. In the same area is a lattice tower, with an elevation of 30m, and fitted with reflector devices, the upper rectangular and the lower crescent-shaped. A black lattice tower, fitted with crosstrees, lies close NE of this tower.

Two blue square towers, with elevations of 9.1m, lie on the N side of the island about 0.8 mile farther NW; they are conspicuous from N and E, but obscured from the NW. A similar tower and several radio masts, all with an elevation of 29m, lie about 0.2 mile W of the water towers; the tower and some of the masts are marked by red obstruction lights.

A concrete pier, 135m long and 13.4m wide, is situated about 0.3 mile E of the NW end of the island. There is a channel 15.2m wide, with a depth of 2.3m on both sides of the jetty. There is a least depth of 2.7m at the seaward end of the jetty.

An oil pier, about 0.2 mile ESE of the concrete pier, extends 134m to the edge of the barrier reef. Tankers using the oil pier anchor off and secure the stern to moorings buoys off the head of the pier.

Pilotage.—No licensed pilot is available.

Anchorage.—Anchorage can be taken, in about 40m, good holding ground of coral and sand, from 0.4 to 0.5 mile ENE of the jetties on the N side of Gan. There is very little swell here, but farther inside the lagoon it may be moderate to heavy.

Ships up to 12,000 grt anchor regularly in this area. Ships formerly anchored farther WNW, but this area is now fouled by a submarine cable.

Caution.—The lighted buoys and buoys in the channels and the lagoon should not be relied upon.

5.67 West side.—The barrier reef, with several islands on it, extends about 7.5 miles NW of Gan.

Fedu, close NW of Gan, to which it is connected by a ruined causeway, was thickly wooded in 1973.

Maradu, thickly wooded in 1973, lies close NW of Fedu and is connected to it by a causeway.

Hankada, about 183m NW of Maradu, is connected to it by a causeway and also to Abuherra farther NW.

Abuherra is connected by a narrow isthmus to Hitaddu, the NW and largest island of Attu Atoll. The latter island is thickly wooded N of its junction with Abuherra. Two radio masts, exhibiting red obstruction lights at an elevation of 73m, lie near the S point of Hitaddu. Close S of the masts is a radome, conspicuous to seaward from S and W, with numerous unlit radio masts, with elevations of about 36m, extending 0.5 mile NW. A large village, with three mosques, is situated on the N part of the island.

Demon Point (0°35'S., 73°05'E.), the N extremity of Hitadu, lies about 3.3 miles N of the radome.

5.68 North side.—From Demon Point, the outer edge of the barrier reef trends SE and E for about 3.5 miles to the W entrance point of Kuda Kanda Channel. Man Kanda Channel, about 0.8 mile farther E, is separated from Kuda Kanda Channel by two sandy cays; the E cay, known as Bushy Islet, has a prominent group of trees on it.

From the E entrance point of Man Kanda Channel, the barrier reef extends about 5.5 miles ENE to the NE extremity of Midu. Mahira Island, on this reef, extends to about 1 mile W of the NW extremity of Midu.

5.69 Lagoon.—The reef fringing the islands extends about 0.5 mile into the lagoon, except in the SW corner, where it is less than 0.2 mile off Gan and Fedu. The fringing reef extends much farther in the NE and NW parts of the lagoon, which are encumbered with coral reefs; the NE part has not been thoroughly examined, and vessels should not approach these areas too closely.

Medagala and Aruhal are two coral heads which dry, lying in the middle of the lagoon, about 3 and 3.5 miles, respectively, N of the NW extremity of Gan. A shoal, with a least depth of 4.9m, lies about 183m S of Medagala, and is marked at its W edge by a lighted buoy.

A coral shoal, with a depth of 1.8m, lies about 1.3 miles NNW of the NW extremity of Gan; a lighted buoy marks the E side of this shoal.

A shoal, with a least depth of 8.5m and marked by a lighted buoy, lies about 1 mile farther N.

Anchorage.—Anchorage, during E winds, can be taken off the W side of the E islands, and in W or S winds off the NE side of the SW islands; local knowledge is necessary. These are the most convenient anchorages for communication with the inhabitants. Anchorage off Gan was previously described in [paragraph 5.66](#).

Swell may be experienced in the lagoon throughout the year, but most often and most severely with W or S winds, when refueling alongside a tanker or loading and discharging a ship may be difficult.

Caution.—A submarine cable, on the W side of the lagoon, is laid between the NW end of Gan and Hitaddu. Vessels are

warned not to anchor within 0.5 mile of this cable, which carries high voltage.

5.70 Gan Channel and Wilingili Channel, the S channels, are to be preferred to the N channels, as they are broader and less intricate. A daylight approach is recommended, even in the case of Gan Channel and Man Kanda Channel, which are marked by lighted buoys, as the lighted buoys tend to be difficult to identify among the airfield lighting until close aboard. Aircraft runway lights at each end of the runway at Gan are switched on when it is in use; the lights are in line 098.5°, but have no navigational significance for ships.

Gan Channel is about 0.4 mile wide, with depths of 16.5 to 18.3m in the fairway.

Wilingili Channel, about 0.4 mile wide between the reefs, has a least depth of 18.3m and is entered on a NW course. Care should be taken to avoid a 12.2m shoal at the lagoon end of the channel close off the reef on the SW side and Medagala Reef with the shoal S.

Man Kanda Channel and Kuda Kanda Channel, the N channels, are not easy to distinguish from N.

Man Kanda Channel, about 0.2 mile wide between the shoal ground extending from the reefs on either side, has a least depth of 12.2m in the fairway. A SSE course leads through the channel between lighted buoys.

Kuda Kanda Channel, about 0.1 mile wide between the fringing reefs, has a least depth of 24m in the fairway. Kuda Kanda Channel is longer and narrower than Man Kanda Channel, and is unlit.